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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,334	08/23/2004	Shuichi Ichikawa	120868	3762

25944 7590 10/10/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	**PAPER NUMBER**
2859	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/505,334	ICHIKAWA ET AL.	
	Examiner	Art Unit	
	Gail Verbitsky	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13 and 16-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13 and 16-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 13, 16-18, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et al. (U.S. 5846276) [hereinafter Nagai] in view of Amer et al. (U.S. 6331075) [hereinafter Amer].

Nagai teaches that a honeycomb structure should be tested for thermal conductivity using a thermal conductivity meter.

Nagai does not teach the particular thermal conductivity meter. Nagai does not teach applying a thermal conductivity film of a paste of a high thermal conductivity onto the honeycomb structure and/ or contact members.

Amer teaches to measure heat conductivity of a specimen/ sample (of different thicknesses), as shown in Figs. 1, 3, in transient or steady state modes. The specimen is connected to two heat conductive (high thermal conductivity) slabs (contact members) at its two ends; the slabs are instrumented with thermocouples. In the steady state mode, the two slabs are, inherently, kept at given different temperatures. The thermal conductivity of the specimen (thin film) is calculated by using formulas in cols. 3-5 derived from a Fourier transform. Amer teaches to apply a contact pressure between the slabs and the specimen. Since there is a heater positioned next to one

slabs and not to another, it is inherent, that in a steady state mode, one slab is at a temperature different from another slab temperature.

For claim 18: Amer teaches to apply a very thin layer/ film of a (high) thermal/ thermally conductive grease/ paste between the specimen and the upper and lower slabs (contact members) 12 and 14 (col. 5, lines 50-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a method, disclosed by Amer, to measure a thermal conductivity of a structure taught by Nagai, to measure a thermal conductivity of a structure, taught by Amer, so as to provide the honeycomb structure with a conduction path through the honeycomb structure, as very well known in the art, and thus, obtaining data how the structure conducts heat.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device having two contact members covered with a film of thermally conductive grease/ paste, as taught by Amer, so as to improve their thermal conductivity, and thus, provide a better heat sinking effect and enhance a heat flow, in order to obtain more accurate results of measurements, by making fast hating and not allowing the heat to be lost into the atmosphere.

With respect to claim 22: the particular contact pressure, i.e., 1 to 10 kg/ cm2, as stated in claim 22, absent any criticality, is only considered to be the "optimum" pressure that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on

the particular geometry of a sample and the desired accuracy of the measurements, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claim 24: the particular thermal conductivity of the honeycomb structure, i.e., 1W/ mK or more, as stated in claim 24, absent any criticality, is only considered to be the "optimum" thermal conductivity that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the intended use of the device/ honeycomb structure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claims 16-17: using the particular material, i.e., material of a high flexibility, used for the highly conductive member, as stated in claims 16-17, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the intended use of the device/ honeycomb structure, its porosity and thickness, so as not to damage the honeycomb structure during the test by using flexible contacts under pressure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

The method steps will be met during the normal operation of the device stated above.

3. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai and Amer, as applied to claims 13, 16-18, 22, 24 above, and further in view of Kirino et al. (U.S. 6730421) [hereinafter Kirino].

Nagai and Amer disclose a device as stated above.

They do not teach the particular material to make the honeycomb structure.

With respect to claim 25: see, for example, Kirino et al. (U.s. 6730421) who teach that a honeycomb structure can be made of silicon nitride.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the structure, disclosed by Nagai and Amer, of silicon nitride, as taught by Kirino, so as to allow the operator to test a thermally conductive honeycomb structure made of silicon nitride material because this material has its own thermal conductivity which is an important factor when a honeycomb structure is being used as, for example, a thermal interface device, in order to know the thermal conductivity of the interface device or heat sink device, and thus, to prevent an object of interest from overheating, by using a known material on the basis of its suitability for the intended use of the invention.
The method steps will be met during the normal operation of the device stated above.

4. Claims 13, 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimoto et al. (U.S. 5693685) [hereinafter Kishimoto] in view of Amer.

Kishimoto teaches a honeycomb structure/ device as shown in Fig. 1. Kishimoto teaches that its thermal conductivity was (needs to be) determined (col. 13, lines 9-15).

For claim 23: Kishimoto teaches that sides of the honeycomb structure are covered with a heat-insulating material (container) 1.

Kishimoto does not teach the particular method for determining thermal conductivity.

Amer teaches the device/ method stated above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a method taught by Amer, to measure a thermal conductivity of a structure of Kishimoto, so as to provide the honeycomb structure with a conduction path through the honeycomb structure, as very well known in the art, and thus, obtaining data how the structure conducts heat.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device having two contact members covered with a film of thermally conductive grease/ paste, so as to improve their thermal conductivity, and thus, provide a better heat sinking effect and enhance a heat flow, in order to obtain more accurate results of measurements, by making fast heating and not allowing the heat to be lost into the atmosphere.

With respect to claim 22: the particular contact pressure, i.e., 1 to 10 kg/ cm2, as stated in claim 22, absent any criticality, is only considered to be the "optimum" pressure that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the particular geometry of a sample and the desired accuracy of the measurements, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claim 24: the particular thermal conductivity of the honeycomb structure, i.e., 1W/ mK or more, as stated in claim 24, absent any criticality, is only considered to be the "optimum" thermal conductivity that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the intended use of the device/ honeycomb structure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claims 16-17: using the particular material, i.e., material of a high flexibility, used for the highly conductive member, as stated in claims 16-17, absent any criticality, is only considered to be the "optimum" material that a person having ordinary

skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the intended use of the device/ honeycomb structure, its porosity and thickness, so as not to damage the honeycomb structure during the test by using flexible contacts under pressure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

The method steps will be met during the normal operation of the device stated above.

The method steps will be met during the normal operation of the device stated above.

Response to Arguments

5. Since the present amendment was caused by Examiner's premature indication of objection (with allowability) of claim 8, the finality of the previous office action is now withdrawn and prosecution is reopened.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Narajo Carvajal (U.S. 7104681) teaches that in order to provide a better heat conduction the conducting surfaces are covered with a thermally conductive grease/ paste.
Sakuma et al. (U.S. 5112136) teach that application of a heat conductive medium on the surfaces of the device minimizing the interface thermal resistance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GKV

Gail Verbitsky
Primary Patent Examiner, TC 2800

October 02, 2006